

Matrox Solios eA/XA

Camera Interface Application Note

CIS VCC-G20X30

February 6, 2009

*Basics about the
camera*

*Mode of operations as
per Matrox Imaging (in
parentheses as per
camera manufacturer)*

*Basics about the
interface modes*

Camera Descriptions

- Effective resolution: $1024 \times 768 \times 8\text{-bit}$ @ 30 fps.
- Analog monochrome video output.
- Progressive scan.
- Internal or external sync.
- Internal or external exposure control.
- 30 MHz internal sync/29.55 MHz external sync pixel clock rate.

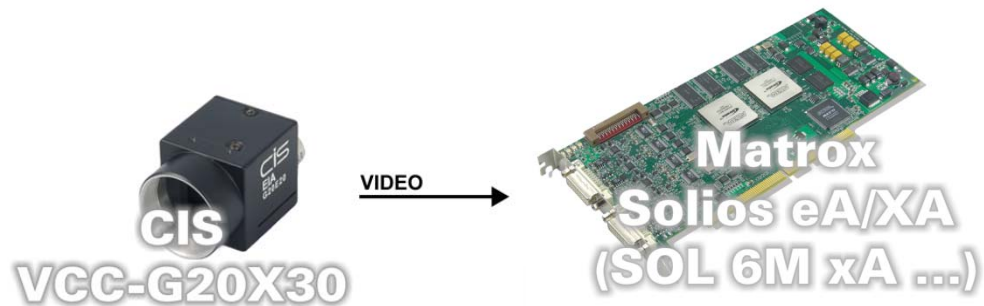
Interface Mode

- Continuous
- Pseudo- continuous (External Trigger Operation by pulse width)
- Asynchronous reset (External Trigger Operation by pulse width)

Camera Interface Briefs

Mode 1: Continuous

- $1024 \times 768 \times 8\text{-bit}$ @ 30 fps.
- Analog monochrome video.
- Matrox Solios eA/XA receiving video signals from camera.
- DCF used: [VCCG20X30_1024x768Con.DCF](#)



Mode 2: Pseudo-continuous

- Up to $1008 \times 768 \times 8\text{-bit}$.
- Analog monochrome video
- Matrox Solios eA/XA sending HSYNC and EXPOSURE1 (TRIGGER IN) signal to camera to initiate the exposure.
- Matrox Solios eA/XA receiving WEN pulse and video signals from camera.
- DCF used: [VCCG20X30_1008x768Pcon.DCF](#)

Continued...

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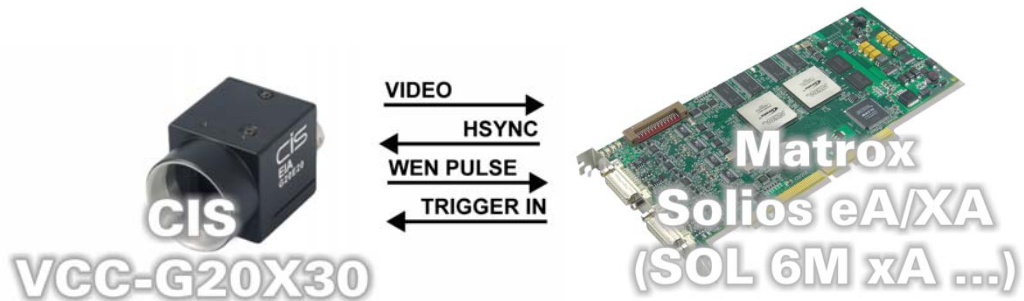
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Basics about the
interface modes

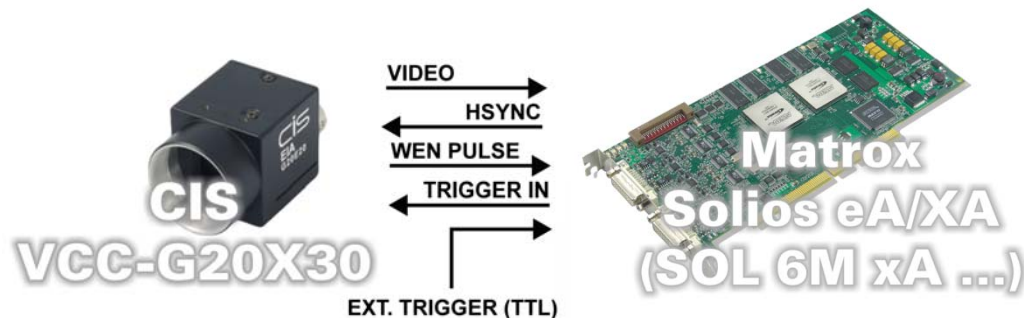
Camera Interface Briefs

Mode 2: Pseudo-continuous



Mode 3: Asynchronous reset

- Up to $1008 \times 768 \times 8$ -bit.
- Analog monochrome video
- Matrox Solios eA/XA receiving external trigger signal.
- Matrox Solios eA/XA sending HSYNC and EXPOSURE1 (TRIGGER IN) signal to camera to initiate the exposure.
- Matrox Solios eA/XA receiving WEN pulse and video signals from camera.
- DCF used: [VCCG20X30_1008x768Async.DCF](#)



Specifics about the
interface modes

Camera Interface Details

Mode 1: Continuous

- **Frame rate:** Matrox Solios eA/XA receives the continuous video from the camera at 30 frames per second.
- **Exposure time:** Exposure time is inversely proportionate to the frame rate (no shutter) or determined by the shutter setting. Refer to the camera manual for more information.

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Specifics about the
interface modes

Camera Interface Details (cont.)

Mode 1: Continuous

- **Camera switch settings:** Refer to the camera manual for additional information. Switches for this mode should be set as follows:

External DIP Switch settings									
1	2	3	4	5	6	7	8	9	10
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Internal Sync. Mode Switch: Set to INTERNAL									

Mode 2: Pseudo-continuous

- **Frame rate:** The frame rate is determined by the frequency of Timer1. The maximum possible frame rate cannot exceed the sum of the exposure time, the camera's frame readout period and the camera's internal delay between the Trigger and Frame Readout.
- **Exposure time:** The width (active duration) of the EXPOSURE1 (TRIGGER IN) signal is the exposure time, which can be modified in the DCF using Matrox Intellicam or with the MIL MdigControl() function. Consult the camera manual for more information.
- **Camera settings:** Refer to the camera manual for additional information. Switches for this mode should be set as follows:

External DIP Switch settings									
1	2	3	4	5	6	7	8	9	10
OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	ON
Internal Sync. Mode Switch: Set to EXTERNAL									

Mode 3: Asynchronous Reset

- **Frame rate:** The frame rate is determined by the frequency of the external trigger signal. The maximum possible frame rate cannot exceed the sum of the exposure time, the camera's frame readout period and the camera's internal delay between the Trigger and Frame Readout.
- **Exposure time:** Refer to Mode 2: Pseudo-continuous.
- **Camera settings:** Refer to Mode 2: Pseudo-continuous.

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Cabling details for the
interface modes

Cabling Requirements

Mode 1: Continuous

- **Cable and Connection:** DVI-TO-8BNC/O (open ended) cable required for video and synchronization signals. The connections between the camera's 12-pin connector and the DVI connector of the Matrox Solios eA/XA are as follows:

Matrox Solios eA/XA (DVI analog input connector-0)			CIS VCC-G20X30 (12-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO	04
GROUND	C5	→	VIDEO OUT GND	03

Mode 2: Pseudo-continuous

- **Cable and Connection:** DVI-TO-8BNC/O (open ended) cable required for video and synchronization signals. The connections between the camera's 12-pin connector and the DVI connector of the Matrox Solios eA/XA are as follows:

Matrox Solios eA/XA (DVI analog input connector-0)			CIS VCC-G20X30 (12-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO	04
GROUND	C5	→	VIDEO OUT GND	03
P0_TTL_AUX (EXP_OUT)	23	→	TRIGGER IN	11
GROUND	11	→	TRIGGER IN GND	12
P0_LVDS/TTL_CHSYNC_IO+	13	→	HSYNC	06
P0_TTL_AUX(TRIG)_IN	14	←	WEN PULSE	10

Mode 3: Asynchronous reset

- **Cable and Connection:** DVI-TO-8BNC/O (open end) cable required for video signal. The connection between the 12-pin connector of the camera and the Matrox Solios are as follow:

Matrox Solios eA/XA (DVI analog input connector-0)			CIS VCC-G20X30 (12-pin connector)	
Pin name	Pin no.		Pin name	Pin no.
CH0_INPUTA	C1	←	VIDEO	04
GROUND	C5	→	VIDEO OUT GND	03
P0_TTL_AUX (EXP_OUT)	23	→	TRIG IN	11
GROUND	11	→	TRIG IN GND	12
P0_LVDS/TTL_CHSYNC_IO+	13	→	HSYNC	06
P0_TTL_AUX(TRIG)_IN	14	←	WEN PULSE	10

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*Cabling details for the
interface modes*

Cabling Requirements (cont.)

Mode 3: Asynchronous reset

- **External trigger:** External trigger should be connected to the OPTO TRIG input of the 9-pin connector (pins 7 and 2) on the external trigger input connector 1 (cable adapter board).

External trigger input (9-pin connector)

Pin name	Pin no.
OPTO TRIG+	07
OPTO TRIG-	02

External Trigger Source

Pin name	Pin no.
SIGNAL	--
GND	--

The DCFs mentioned in this application note are also attached (embedded) to this PDF file – use the Adobe Reader's View File Attachment to access the DCF files. The information furnished by Matrox Electronics System, Ltd. is believed to be accurate and reliable. Please verify all interface connections with camera documentation or manual. Contact your local sales representative or Matrox Sales office or Matrox Imaging Applications at 514-822-6061 for assistance. © Matrox Electronic Systems Ltd, 2009-2011.

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